

Amendments to the Claims

This listing of claims replaces all prior versions, and listings, of claims in the above-identified application:

1. (Currently Amended) A medical device lead connector system comprising:

(a) a connector header including a connector bore, the connector bore having an inner bore surface;

(b) a lead having a lead body, a plurality of elongated insulated conductors extending within the lead body between a plurality of lead electrodes at a lead body distal end and a lead connector at a lead body proximal end, wherein the lead connector extends along a longitudinal axis and includes; including:

an array of lead connector pads, wherein the pads are distributed circumferentially in an adjacent spaced apart relationship around a periphery of the lead connector such that a plane perpendicular to the longitudinal axis of the lead connector intersects with more than one of the lead connector pads of the array of lead connector pads, and

a connector pin proximal of the array of lead connector pads, the connector pin being coupled to one of the plurality of lead electrodes, and each of the lead connector pads being coupled to an individual one of the other of the plurality of lead electrodes; and

(c) an adaptor [[,]] comprising:

an insulating adaptor body having a proximal end and a distal end;

a lumen within the adaptor body having an inner lumen surface extending from a proximal end to a distal end and dimensioned to receive the lead connector for relative rotational movement therein [[,]] , and

a connector ring extending circumferentially over a segment of an exterior surface of the adaptor body and shaped to form an electrical contact resilient key along an inner portion of the connector ring extending through the insulating adaptor body into the lumen to project from the inner lumen surface, the key dimensioned so as to be in

registration with a selected one of the lead connector pads at a time when the lead connector is inserted into the lumen of the adaptor body and rotated relative to the adaptor body about a longitudinal axis extending from the proximal end of the insulating adaptor body to the distal end of the insulating ~~adapter~~ adaptor body so as to be in alignment with the selected lead connector pad;

wherein registration of the key with a selected one of the lead connector pads at a time provides for lead electrode array selectivity; and

wherein the insulating adaptor body is dimensioned to be received within the connector bore of the connector header.

2. (Previously presented) The medical device lead connector system of claim 1, wherein the external surface configuration of the insulating adaptor body conforms to an industry standard.

3. (Previously presented) The medical device lead connector system of claim 1, wherein the external surface of the adaptor body conforms to an industry standard.

4. (Previously presented) The medical device lead connector system of claim 1, wherein the external surface of the adaptor body further includes a set of sealing rings positioned proximal to the conductive surface.

5. (Previously presented) The medical device lead connector system of claim 1, wherein the lead connector further includes a plurality of sealing rings positioned distal to the plurality of connector pads.

6. (Previously presented) The medical device lead connector system of claim 1, wherein the lead connector further includes a mechanical stop to engage the distal end of the adaptor body when the lead connector is fully inserted within the lumen of the adaptor body.

7. (Cancelled)

8. (Previously presented) The medical device lead connector system of claim 1, wherein the key is a resilient force beam.

9. (Previously presented) The medical device lead connector system of claim 1, wherein each connector pad includes a surface depression adapted to mate with the key.

10. (Currently Amended) A medical device lead connector system comprising:

(a) a connector header including a connector bore, the connector bore having an inner bore surface;

(b) a lead having a lead body, a plurality of elongated insulated conductors extending within the lead body between a plurality of lead electrodes at a lead body distal end and a lead connector at a lead body proximal end, wherein the lead connector extends along a longitudinal axis and includes: including:

an array of lead connector pads, wherein the pads are distributed circumferentially in an adjacent spaced apart relationship around a periphery of the lead connector such that a plane perpendicular to the longitudinal axis of the lead connector intersects with more than one of the lead connector pads of the array of lead connector pads, and

a connector pin proximal of the array of lead connector pads, the connector pin being coupled to one of the plurality of lead electrodes, and each of the lead connector pads being coupled to an individual one of the other of the plurality of lead electrodes, wherein each connector pad includes a resilient protrusion extending radially from the periphery of the lead connector; ~~adapted to mate with the key;~~ and

(c) an adaptor [[,]] comprising:

an insulating adaptor body having a proximal end and a distal end;

a lumen within the adaptor body having an inner lumen surface extending from a proximal end to a distal end and dimensioned to receive the lead connector for relative rotational movement therein ~~[[.]]~~ , and

a connector ring extending circumferentially over a segment of an exterior surface of the adaptor body and shaped to form a surface depression along an inner portion of the connector ring, the depression dimensioned so as to be in registration with the protrusion of a selected one of the lead connector pads at a time when the lead connector is inserted into the lumen of the adaptor body and rotated relative to the adaptor body about a longitudinal axis extending from the proximal end of the insulating adaptor body to the distal end of the insulating ~~adaptor~~ adaptor body so as to be in alignment with the selected lead connector pad;

wherein registration of the depression with the protrusion of a selected one of the lead connector pads at a time provides for lead electrode array selectivity; and

wherein the insulating adaptor body is dimensioned to be received within the connector bore of the connector header.

11. (Canceled)

12. (Currently Amended) A method for optimizing implantable medical device electrical stimulation therapy using a lead having a plurality of selectively active lead electrodes, comprising the steps of:

providing a lead connector at the proximal end of the lead, the lead connector extending along a longitudinal axis and including an array of individual, circumferentially distributed lead connector pads such that a plane perpendicular to the longitudinal axis of the lead connector intersects with more than one of the lead connector pads, and a connector pin proximal of the array of lead connector pads, wherein the connector pin is coupled to one of the plurality of lead electrodes and each of

the individual, circumferentially distributed lead connector pads being coupled to an individual one of the other of the plurality of lead electrodes;

providing an adaptor, the adaptor comprising an insulating adaptor body having a proximal end and a distal end, a lumen within the adaptor body having an inner lumen surface extending from a proximal end to a distal end and dimensioned to receive the lead connector for relative rotational movement therein, a connector ring extending circumferentially over a segment of an exterior surface of the insulating adaptor body and shaped to form an electrical contact resilient key along an inner portion of the connector ring and extending through the insulating adaptor body into the lumen to project from the inner lumen surface, the key being dimensioned to be in registration with one of the individual, circumferentially distributed lead connector pads at a time when the lead connector is inserted into the lumen of the adaptor body and rotated relative to the adaptor body to align with any one of the plurality of lead connector pads;

inserting the lead connector within the adaptor lumen; and

rotating the adaptor about an axis extending through the adaptor to selectively align the key of the adaptor in registration with one of the lead connector pads and thereby select the lead connector pad and thereby permit selective activation of one of the lead electrodes, wherein lead electrode array selectivity is provided.

13. (Previously presented) The method of claim 12, further comprising the step of inserting the adaptor into a connector header bore of an implantable medical device to electrically couple the selected lead connector pad to the implantable medical device.

14. (Cancelled)

15. (New) A medical device lead connector system for coupling a lead to a medical device, wherein the medical device comprises a connector bore defining an inner surface, wherein the system comprises:

a lead connector extending from a proximal end to a distal end along a longitudinal axis, wherein the lead connector comprises a plurality of connector pads electrically isolated from one another and distributed circumferentially around an outer surface of the lead connector such that a plane perpendicular to the longitudinal axis of the lead connector intersects with more than one of the plurality of connector pads; and

an adaptor configured to be received within the connector bore of the medical device, wherein the adaptor comprises:

a body comprising insulative material and extending from a proximal end to a distal end, wherein the body comprises a lumen defining an inner lumen surface and extending from the proximal end to the distal end, wherein the lumen is configured to receive the lead connector, and

an electrical connector along an outer surface of the body configured to be electrically coupled to a conductive portion of the inner surface of the connector bore of the medical device when the adaptor is received therein, wherein the electrical connector comprises a electrical contact key along the inner lumen surface of the lumen of the body, wherein the electrical contact key is configured to contact a selected connector pad of the plurality of connector pads to electrically couple the electrical connector of the adaptor to the selected connector pad of the lead connector when the lead connector is received within the lumen of the body of the adaptor,

wherein the lead connector is configured to be rotatable about the longitudinal axis when the lead connector is received within the lumen of the body of the adaptor to select any one lead connector pad of the plurality of lead connector pads to be contacted by the electrical contact key of the electrical connector of the adaptor.

16. (New) The system of claim 15, wherein the insulative material of the body of the adaptor is configured to contact the plurality of connector pads other than the selected connector pad to electrically isolate the plurality of connector pads other than the selected connector pad.

17. (New) The system of claim 15, wherein the electrical connector comprises a connector ring.

18. (New) The system of claim 15, wherein the lead connector further comprises a connector pin located proximally to the plurality of connector pads and configured to extend through the lumen of the body of the adaptor beyond the proximal end of the body of the adaptor when the lead connector is received within the lumen of the body of the adaptor.

19. (New) The system of claim 15, wherein the electrical contact key of the electrical connector extends into the lumen of the body of the adaptor, and wherein each connector pad of the plurality connector pads defines a surface depression configured to receive the electrical contact key of the electrical connector of the adaptor when the lead connector is received within the lumen of the body of the adaptor.

20. (New) The system of claim 15, wherein each connector pad of the plurality connector pads comprises a protrusion extending radially from the outer surface of the lead connector, and wherein the electrical contact key of the electrical connector defines a depression configured to receive the protrusion of the selected connector pad of the plurality of connector pads when the lead connector is received within the lumen of the body of the adaptor.

21. (New) A method of electrical coupling an electrode of a lead to a medical device using an adaptor, wherein lead comprises a plurality of electrodes, wherein the adaptor comprises a body comprising a lumen defining an inner lumen surface and a electrical connector along an outer surface of the body, wherein the electrical connector comprises a electrical contact key along the inner lumen surface of the lumen of the body, wherein the method comprises:

providing a lead connector located on the proximal end of the lead, wherein the lead connector extends along a longitudinal axis and comprises a plurality of connector pads electrically isolated from one another and distributed circumferentially around an outer surface of the lead connector such that a plane perpendicular to the longitudinal axis of the lead connector intersects with more than one of the plurality of connector pads, wherein each of the plurality of connector pads is electrically coupled to a different electrode of the plurality of electrodes of the lead than the other connector pads;

selecting an electrode of the plurality electrodes of the lead by rotating the lead connector and the adaptor about the longitudinal axis relative each other such that the electrical contact key of the electrical connector of the adaptor is aligned with the connector pad of the plurality of connector pads corresponding to the selected electrode; and

inserting the lead connector into the lumen of the adaptor after selecting the electrode.